

Taxon: <i>Abroma augusta</i> (L.) L.f.	Family: Malvaceae
Common Name(s): devil's cotton	Synonym(s): <i>Abroma fastuosum</i> Jacq. <i>Theobroma augustum</i> L.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 9 Sep 2019
WRA Score: 4.0	Designation: EVALUATE	Rating: Evaluate

Keywords: Tropical Shrub, Fiber Plant, Irritating Hairs, Root Suckers, Short Seed Viability

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed		
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	n
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets		
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally		
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m ²)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	[No evidence of domestication] "Priorities in any future breeding programme should be higher yields and the development of cultivars without irritating hairs."
102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA
103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	" <i>Abroma augusta</i> is distributed from India throughout South-East Asia to southern China, northern Australia and the Solomon Islands."
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 6 Sep 2019]	"Native Asia-Temperate CHINA: China [Guangdong Sheng, Guizhou Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India (n.), Nepal INDO-CHINA: Myanmar, Thailand, Vietnam MALESIA: Indonesia, Malaysia, Philippines Australasia AUSTRALIA: Australia [Queensland (n.)] Pacific NORTHWESTERN PACIFIC: Micronesia"

Qsn #	Question	Answer
202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed]	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	" <i>Abroma augusta</i> can be grown in areas with an average annual temperature above 15°C, and an average annual rainfall of at least 1000 mm. An average annual temperature of 25–30°C and a well-distributed average annual rainfall of 1800–2500 mm are optimal. The species is not suitable for areas with a marked dry season. It is not frost-hardy and it is not found at altitudes above 1200 m. <i>Abroma augusta</i> is a short-day plant."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	" <i>Abroma augusta</i> is distributed from India throughout South-East Asia to southern China, northern Australia and the Solomon Islands. It is cultivated in India and sometimes in South-East Asia. It has also been grown on a small scale in tropical Africa, especially in DR Congo and Uganda; it has also been introduced into West Africa and Tanzania. The present distribution of <i>Abroma augusta</i> in tropical Africa is unclear."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"It is cultivated in India and sometimes in South-East Asia. It has also been grown on a small scale in tropical Africa, especially in DR Congo and Uganda; it has also been introduced into West Africa and Tanzania. The present distribution of <i>Abroma augusta</i> in tropical Africa is unclear."

Qsn #	Question	Answer
301	Naturalized beyond native range	y
	Source(s)	Notes
	Conservatoire et Jardin botaniques & South African National Biodiversity Institute. (2019). African Plant Database (version 3.4.0). http://www.ville-ge.ch/musinfo/bd/cjb/africa/ . [Accessed 6 Sep 2019]	" <i>Abroma augustum</i> ... Status for NA : accepted (naturalised-introduced) Status for TA : accepted (naturalised-introduced)"
	Wagner, W.L., Herbst, D.R. & Lorence, D.H. (2019). Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/ . [Accessed 6 Sep 2019]	No evidence in the Hawaiian Islands to date
302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as an agricultural weed in one reference. No impacts identified
303	Agricultural/forestry/horticultural weed	
	Source(s)	Notes
	Zahra, F., & Mahbubur Rahman, A. H. M. (2018). Documentation of Angiosperm Weed Flora in and around Rajshahi Metropolitan City, Bangladesh. <i>Discovery Agriculture</i> , 4, 33-46	"Table 1 Assessment of Angiosperm weed flora in and around Rajshahi Metropolitan city, Bangladesh" [<i>Abroma augusta</i> listed as a weed, but impacts are unspecified]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as an agricultural weed in one reference. No impacts identified
304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
305	Congeneric weed	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 9 Sep 2019]	[Possibly only one variable species exists] "The number of taxa in the <i>Abroma augusta</i> complex is disputed. Based on the presence or absence of prickles on the stems and branches, the colour of the flowers and the number of seeds in the capsules up to 3 species have been distinguished: <i>Abroma augusta</i> , unarmed, flowers red, capsule with more than 200 seeds; <i>Abroma mollis</i> DC., unarmed, flowers yellow, capsule with more than 200 seeds; and <i>Abroma fastuosa</i> R.Br., armed, capsules with 50–60 seeds, only occurring in Madagascar. Here the view is accepted that there is only one widespread, highly variable species, but a critical revision is needed."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

Qsn #	Question	Answer
401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Shrubs, 1–4 m tall. Branchlets densely stellate velutinous when young. Stipules linear, 5–10 mm, caducous; petiole 1–10 cm; leaf blade cordate or ovate-cordate, sometimes 3–5-lobed, 10–22 × 9–18 cm, abaxially glabrous or sparsely stellate, adaxially densely puberulent, basal veins 3–7, prominently raised on both surfaces, base cordate or obliquely cordate, apex acute or acuminate."
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	[No spines, thorns or burrs, but with irritating hairs] "stem and branches with tenacious bark, all parts often with prickly-pointed, irritating, stellate hairs and sometimes also with glandular hairs"

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Shrubs, 1–4 m tall." [No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"In India and New Guinea the leaves are occasionally eaten. The seed is edible as well. The species has been proposed for reforestation in Asia, as it is able to control cogon grass (<i>Imperata cylindrica</i> (L.) Raeusch.). It is sometimes grown as an ornamental. " ... "all parts often with prickly-pointed, irritating, stellate hairs and sometimes also with glandular hairs" [Edible to humans. Palatability to animals unknown, but irritating hairs may deter browsing]

405	Toxic to animals	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 9 Sep 2019]	"The seed oil has shown phytotoxic activity against <i>Lemna aequinoctialis</i> Welw and moderate antifungal activity against <i>Trichophyton schoenleinii</i> and <i>Microsporum canis</i> ; it did not show antibacterial or insecticidal effects, nor toxicity in the brine shrimp bioassay."

Qsn #	Question	Answer
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[No evidence of toxicity to humans, or animals] "The leaves are eaten as a supplementary source of food in New Guinea and India. In the Philippines and India the fresh or dried root bark is considered an emmenagogue and in Indonesia the root is used against scabies. <i>A. augusta</i> has been recommended for soil reclamation."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"In Uganda <i>Abroma augusta</i> has proven very susceptible to Verticillium wilt, which may kill the plant or lead to stunted growth."
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	"No information exists on diseases and pests affecting <i>A. augusta</i> in Asia. In Uganda, however, it is very susceptible to Verticillium wilt."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"In India and New Guinea the leaves are occasionally eaten. The seed is edible as well. The species has been proposed for reforestation in Asia, as it is able to control cogon grass (<i>Imperata cylindrica</i> (L.) Raeusch.). It is sometimes grown as an ornamental. " ... "all parts often with prickly-pointed, irritating, stellate hairs and sometimes also with glandular hairs" [Edible, with no reports of toxicity, but irritating hairs may cause problems]

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Wabuyeleye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 9 Sep 2019]	[No evidence. Unlikely given wet growing conditions and limitations in areas with a marked dry season] " <i>Abroma augusta</i> can be grown in areas with an average annual temperature above 15°C, and an average annual rainfall of at least 1000 mm. An average annual temperature of 25–30°C and a well-distributed average annual rainfall of 1800–2500 mm are optimal. The species is not suitable for areas with a marked dry season."

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	"As a light-loving plant, it does not occur in primary forest."

Qsn #	Question	Answer
	Plants for a Future. (2019). <i>Abroma augusta</i> . https://pfaf.org/user/Plant.aspx?LatinName=Abroma+augusta . [Accessed 9 Sep 2019]	"It cannot grow in the shade."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Plants for a Future. (2019). <i>Abroma augusta</i> . https://pfaf.org/user/Plant.aspx?LatinName=Abroma+augusta . [Accessed 9 Sep 2019]	"Succeeds in most soils, so long as they are well-drained, growing best in a fertile, medium loa [418]. Prefers a pH in the range 5 - 6, tolerating 4.5 - 6.5[418]."
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	"The best soils for <i>A. augusta</i> are fertile alluvials with a good structure and good drainage, as it does not tolerate waterlogging for a long period. However, it will also survive and grow when soil conditions are less favourable."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"Erect shrub or small tree up to 10 m tall, up to 2–4 m tall when cultivated, normally branching at –2 m height but due to coppicing often multistemmed from the base"

412	Forms dense thickets	
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	[Occurs in thickets. Unknown if thickets are monocultures, or comprised of a number of species] "Where growing wild, the species grows in tufts or thickets, secondary forest, waste places and village borders and along railways and roads, seemingly preferring forest edges and banks of water courses."

501	Aquatic	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	[Terrestrial] "Where growing wild, the species grows in tufts or thickets, secondary forest, waste places and village borders and along railways and roads, seemingly preferring forest edges and banks of water courses."

502	Grass	n
	Source(s)	Notes

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 6 Sep 2019]	Family: Malvaceae Subfamily: Byttnerioideae Tribe: Byttnerieae Alternate family(ies): Sterculiaceae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 6 Sep 2019]	Family: Malvaceae Subfamily: Byttnerioideae Tribe: Byttnerieae Alternate family(ies): Sterculiaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"Erect shrub or small tree up to 10 m tall, up to 2–4 m tall when cultivated, normally branching at –2 m height but due to coppicing often multistemmed from the base"

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	[No evidence] " <i>Abroma augusta</i> is distributed from India throughout South-East Asia to southern China, northern Australia and the Solomon Islands. It is cultivated in India and sometimes in South-East Asia. It has also been grown on a small scale in tropical Africa, especially in DR Congo and Uganda; it has also been introduced into West Africa and Tanzania. The present distribution of <i>Abroma augusta</i> in tropical Africa is unclear. "

602	Produces viable seed	y
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	" <i>Abroma augusta</i> can be propagated by seed, stem cuttings or suckers emerging from lateral roots. The 1000-seed weight is c. 6 g. For seed propagation fresh material should be used, as seeds show low germination rates and lose viability rather quickly. Soaking in water for 24–48 hours improves germination, and germination of soaked seeds normally starts within 9 days. At a temperature of 33°C germination is more rapid and the final germination percentage higher than at 20–25°C. "
	NIIR Board of Consultants & Engineers. (2005). Natural Fibers Handbook with Cultivation & Uses. National Institute of Industrial Research, Delhi	"The seed of <i>A. augusta</i> loses its viability fairly quickly and, in addition, its germinative power is poor, so it is essential to sow fresh seed and often necessary to soak the seed before sowing."

Qsn #	Question	Answer
603	Hybridizes naturally	
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[Unknown, but one, highly variable species, may only exist, making hybridization unlikely] "Another continuing dispute is the number of species in <i>Abroma</i> . Based on the presence or absence of prickles on the stems and branches, the colour of the flowers and the number of seeds in the capsules up to 3 species have been distinguished: <i>A. augusta</i> , unarmed, flowers red, capsule with more than 200 seeds; <i>A. mollis</i> DC., unarmed, flowers yellow, capsule with more than 200 seeds; <i>A. fastuosa</i> R.Br., armed, capsules with 50-60 seeds, only occurring on Madagascar. Here we accept the view that there is only one widespread, highly variable species, but a critical revision is needed."

604	Self-compatible or apomictic	
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed]	" <i>Abroma augusta</i> is protogynous and allogamous, with pollination by wind and insects." [In plants, allogamy is used specifically to mean the use of pollen from one plant to fertilize the flower of another plant and usually synonymous with the term "cross-fertilization" or "cross-pollination"]
	Basu, M., & Pal, P. K. (2008). Floral Biology Vis-A-Vis Pollination Ecology of <i>Abroma augusta</i> (L.) LF. <i>Nelumbo</i> , 50(1-4), 57-66	[Ability to self unclear. Requires pollinators, and suggests autogamy, or self-pollination, will not occur without insect pollinators. Other sources suggest plants are allogamous, or outcrossing] "In <i>Abroma augusta</i> , the cupular ring of outwardly reflexed staminodes and the inverted disposition of the anthers hinder pollen transfer from the anthers to the stigma. There is no possibility of the stigma receiving pollen grains from anthers of even the same flower unless they are carried by a biotic vector. Thus, the plant is obligatorily dependent upon its pollinators, even for autogamy. This has been confirmed by bagging several flowers before the arrival of pollinators. Fruit set did not occur in any of those flowers."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	" <i>Abroma augusta</i> is protogynous and allogamous, with pollination by wind and insects."

Qsn #	Question	Answer
	Basu, M., & Pal, P. K. (2008). Floral Biology Vis-A-Vis Pollination Ecology of <i>Abroma augusta</i> (L.) LF. Nelumbo, 50(1-4), 57-66	"Floral biology with respect to pollination ecology of <i>Abroma augusta</i> , a traditionally used medicinal plant, has been worked out. The pollination is entomophilous, performed by two species of Diptera, one belonging to <i>Agromyza</i> and the other to <i>Melanagromyza</i> . The former one is overwhelmingly dominant in the visitor-population and found to be much more active within the flower in comparison to the latter, which is somewhat lethargic. Pollinators are primarily attracted by sapromyophilous means. The flower is pendulous and semi-trap type with lateral windows and window-panes. Internally, the flower is differentiated into the androecial and gynoecial chambers separated by a staminodial cup. The plant is obligatorily entomophilous, even for autogamy. A number of floral rewards are offered within the androecial and gynoecial chambers for retention and movement of the pollinators. Pollen deposition over the pollinators is nototribic."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"It normally spreads by seed, but when the stems are cut, new shoots may emerge from the buds in the axils of the leaf scars at the base of the plant. Suckers may also develop from lateral roots running parallel to the soil surface." ... " <i>Abroma augusta</i> can be propagated by seed, stem cuttings or suckers emerging from lateral roots."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"In DR Congo flowering occurs 100–120 days after sowing, and the fruits ripen 60–90 days later."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[Occurs along roads and railways, and may be dispersed by human activity, although fruit and seeds lack means of external attachment] "Fruit an obconical capsule, about 4-5 cm x 3-4 cm, base rounded, top truncate, 5-winged and angled, sometimes beaked, enveloped by the slightly enlarged calyx, densely prickly hairy, apical portion loculicidal, lateral parts septically dehiscent, with numerous seeds. Seed cylindrical to obovoid, 3-4 mm x 2 mm, without wings or aril, black." ... "When occurring naturally, <i>A. augusta</i> is found in thickets or tufts, secondary forest, waste places and village borders and along railways and roads, seemingly preferring forest edges and the banks of clearings or watercourses."

Qsn #	Question	Answer
702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	"It is sometimes cultivated in India and New Guinea and experimental plantings have been set up in the Philippines and Africa (Uganda, Democratic Republic of Congo)." [Intentionally cultivated]

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[Cultivated crop plant, but no evidence that seeds have become a contaminant of produce] "Fruit an obconical capsule, about 4-5 cm x 3-4 cm, base rounded, top truncate, 5-winged and angled, sometimes beaked, enveloped by the slightly enlarged calyx, densely prickly hairy, apical portion loculicidal, lateral parts septicidally dehiscent, with numerous seeds. Seed cylindrical to obovoid, 3-4 mm x 2 mm, without wings or aril, black."

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[No adaptations for wind dispersal] "Fruit an obconical capsule, about 4-5 cm x 3-4 cm, base rounded, top truncate, 5-winged and angled, sometimes beaked, enveloped by the slightly enlarged calyx, densely prickly hairy, apical portion loculicidal, lateral parts septicidally dehiscent, with numerous seeds. Seed cylindrical to obovoid, 3-4 mm x 2 mm, without wings or aril, black."

705	Propagules water dispersed	y
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[Probably dispersed by water. Common along watercourses] "A. augusta is found in thickets or tufts, secondary forest, waste places and village borders and along railways and roads, seemingly preferring forest edges and the banks of clearings or watercourses."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[No evidence, and seeds lack an aril that may attract birds or ants] "Fruit an obconical capsule, about 4-5 cm x 3-4 cm, base rounded, top truncate, 5-winged and angled, sometimes beaked, enveloped by the slightly enlarged calyx, densely prickly hairy, apical portion loculicidal, lateral parts septicidally dehiscent, with numerous seeds. Seed cylindrical to obovoid, 3-4 mm x 2 mm, without wings or aril, black."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes

Qsn #	Question	Answer
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	"Seed cylindrical to obovoid, 3-4 mm x 2 mm, without wings or aril, black." [No evidence. No aril, and no means of external attachment]

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[No evidence that fruit or seeds are consumed or internally dispersed] "Fruit an obconical capsule, about 4-5 cm x 3-4 cm, base rounded, top truncate, 5-winged and angled, sometimes beaked, enveloped by the slightly enlarged calyx, densely prickly hairy, apical portion loculicidal, lateral parts septicidally dehiscent, with numerous seeds. Seed cylindrical to obovoid, 3-4 mm x 2 mm, without wings or aril, black."

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Brink, M. and Escobin, R.P. (eds.). (2003). Plant Resources of South-East Asia No 17. Fibre plants. Backhuys Publishers, Leiden, The Netherlands	[Unknown. Produces numerous seeds, but densities unspecified] "Fruit an obconical capsule, about 4-5 cm x 3-4 cm, base rounded, top truncate, 5-winged and angled, sometimes beaked, enveloped by the slightly enlarged calyx, densely prickly hairy, apical portion loculicidal, lateral parts septicidally dehiscent, with numerous seeds."

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	Notes
	Wabuyele, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"For seed propagation fresh material should be used, as seeds show low germination rates and lose viability rather quickly."
	NIIR Board of Consultants & Engineers. (2005). Natural Fibers Handbook with Cultivation & Uses. National Institute of Industrial Research, Delhi	"The seed of <i>A. augusta</i> loses its viability fairly quickly and, in addition, its germinative power is poor, so it is essential to sow fresh seed and often necessary to soak the seed before sowing."

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes

Qsn #	Question	Answer
	Wabuye, E. (2011). <i>Abroma augusta</i> (L.) L.f. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 6 Sep 2019]	"Erect shrub or small tree up to 10 m tall, up to 2–4 m tall when cultivated, normally branching at ~2 m height but due to coppicing often multistemmed from the base" ... "The stems are coppiced at about 25 cm above the ground, as cutting at a lower height may endanger regrowth. Vigorous regrowth normally occurs, with 2–3(–5) new shoots per plant. Up to 4 harvests per year may be possible, but 1–2 harvests is most common."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates
- Naturalized in Africa
- Reported to be a crop weed, but no impacts have been specified
- Covered with irritating hairs
- Tolerates many soil types (potential spread not substrate-limited)
- Grows in tufts or thickets (but unclear if it forms dense monocultures, or is a component of thicket vegetation)
- Reproduces by seeds and vegetatively by root suckers
- Rapidly reaches maturity (100-120 days from seed)
- Seeds dispersed by people and probably water; other dispersal agents unknown
- Able to coppice and resprout after cutting

Low Risk Traits

- Unarmed (no spines, thorns, or burrs), but has irritating hairs
- Non-toxic
- Valued as a fiber plant, and used as a food in some regions
- A light-loving plant (unlikely to spread into shady, intact forests)
- Seeds rapidly lose viability, and will not form a persistent seed bank

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Unknown. A light demanding tree, and presumably shade intolerant, but may form thickets

Outcome = Evaluate Further